belgium

elconews e-zine

January 2006

Happy New Year to all of our readers

Adiós to metal

Peter Weedon – Eurodetection, Madrid, Spain, tells us why Elcometer metal detectors are perfect for his green fingered customers.

Lettuce is a vegetable that we all take for granted. Among those that don't is a customer of Peter Weedon's, the owners of a lettuce farm.

Lettuce seeds are planted and then covered with polythene held down by U shaped metal pins. The lettuces then grow through holes in the polythene, which is there to retain moisture in the ground and prevent ground-dwelling pests eating the leaves.

When the lettuces are harvested and packed by machine, it is possible that some of these metal U pins, that are made of a 5mm wire and over all are approximately 15cm x 8cm, are caught up with the lettuces.

Because of this problem every box, containing between 20 and 30 lettuces, had to be manually checked to ensure no metal pins had been inadvertently harvested with the crop.

Now, the company utilise Elcometer P520 metal detectors. The metal detector is simply passed over the box of lettuces and if a metal pin has found it's way in there, the Elcometer P520 sounds the alarm and the pin is located and removed.

The simplicity of this operation has saved the lettuce farm significant amounts of time, making them more efficient and saving money.

The Elcomobile

The proud driver of this custom painted bright orange Toyota Corolla carrying the Elcometer logo, is Milind Dande, Coating Sales Engineer for Mazrui Engineering Products (MEP) in Dubai.

Colin Davidson, Regional Manager for MEP tells us, "Milind has been with MEP since January 2005 and spends most of his time in the field. As MEP are relatively new to the coatings business, the Elcomobile is an important part of the marketing strategy to raise awareness. And what better way to do it than to advertise Elcometer, a name synonymous with coating testing and a brand that is instantly recognisable.

MEP has enjoyed considerable success in the first year as an Elcometer distributor and the car has contributed greatly to this. As sales continue to grow, we hope to have a fleet of Elcomobiles, so watch this space!"

A prize for talking

John Podvoiskis of Elcometer, Manchester has recently received an award for a presentation he gave back in February 2005.

The I.T Watkins Award is awarded for the best presentation of the year given to the Midlands Branch of the Institute of Metal Finishing (UK).

The members of the branch voted that John's presentation titled "Factors Influencing Thickness Testing – Avoiding Surprises" deserved this merit. The Branch Chairman, Mr.G.R Davis, presented the Award after the Annual General Meeting of the Institute.

"It's not what you say but the way you say it," said John. "Such an award recognises the effort that goes into making a presentation watchable and enjoyable while being packed with information. In today's multi-media world, the language of viewing seems to have changed and such encouragement will help authors develop their skills to match it."

John Podvoiskis (pictured left) receiving the I.T Watkins Award from the Chairman of Midlands Branch of the IMF, Mr.G.R Davis

John has worked for Elcometer for 30 years and, as Technical Support Engineer and co-editor of **elconews** e-zine, has a wealth of knowledge about measuring coatings. It is this knowledge and his communication skills that earned him the award.

The Award is now proudly displayed in the Technical Support area in Elcometer's offices in Manchester.

product of the month

The NEW Elcometer 214 Infrared Thermometer.

The Elcometer 214 has been updated to a new and improved version.

The infrared digital thermometer now has a temperature range of -32°C to 420°C (-20°F to 788°F) and can measure objects as small as 13mm. The narrow beam ensures accurate readings and takes only 0.3 seconds to scan hot or cold spots and take a reading. The thermometer is extremely lightweight, has an audible high / low alarm, hold function and shows minimum and maximum temperatures on the backlit display.

If you would like further information on the New Elcometer 214 Infrared Digital Thermometer, or any of our other products, please visit our website www.elcometer.com or contact your local Elcometer distributor.

coatings on site

An alternative to traditional blast cleaning

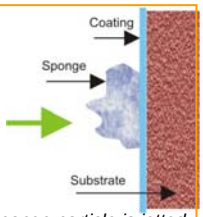
Traditional blast cleaning for removing old coatings, cleaning or roughening involves the use of minerals and grits, with different grades for different jobs.

The problem with this method has always been the waste product and the dust it generates, making grit blasting unsuitable for many environments.

Water blasting is now becoming more common and now the latest innovation utilises sponge abrasives.

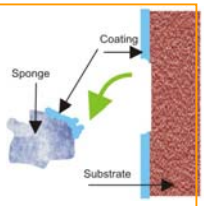
The sponge abrasives are made of polyurethane particles that are impregnated with different grades of abrasive, depending on the job being carried out.

The sponge particles are then jetted under force at the surface. The nature of sponge is that it flattens and opens on impact. This does one of two things. Firstly it exposes the abrasive to the surface. Then, as it leaves the surface, it constricts, taking with it the particles that would normally become airborne.



Sponge particle is jetted against the surface at force.

The benefit of using sponge is clear. But what may be surprising is that the level of chlorides remaining of the cleaned surface is also reduced.



Sponge particle falls away, taking the coating with it.

Duplicate metal panels with chloride contamination were cleaned, one with sponge and one with grit blasting. When chloride testing on the cleaned surfaces was carried out using an Elcometer 138 Bresle Kit, it was found that using sponge left significantly less chloride on the surface (in this particular test). It did not require additional washing but the grit blasted surface did.

When using new methods and technologies, it is important to establish how well they work in comparison to an existing method. Controlled tests using precision equipment is important, such as the Elcometer 138 Bresle Kit for checking chloride levels or the Elcometer 122 Testex Replica Tape and the Elcometer 124 Thickness Gauge to check the surface profile. Comparing accurate facts and figures makes it much easier to decide if a new technology meets your needs more effectively.

Editor's correction

In the November issue of **elconews** e-zine the article entitled "New long range probes and long lead probes for the Elcometer 456" reported the capabilities of the F6 probe.

Please note that the F6 probe is capable of measuring a coating thickness of up to 25mm / 1" on a magnetic metal substrate only and does not measure up to 50mm / 2" as stated.

coatings in the lab

Elcometer 110 on the move

The Elcometer 110 Patti ® is a portable pneumatic adhesion tester which uses compressed gas either from a canister or a compressed air feed to produce a uniform pull force.

There is a new accessory available for this tester. This kit includes the hose to connect to the unit and a handle that is compatible with a cylinder of compressed gas.

These small gas cylinders can power the Elcometer 110, making it more portable than ever. The gas canisters can be ordered from *Genuine Innovations* and are used as cylinders for their *Ultraflate Plus* product for inflating bicycle tyres. Available in 12g, 16g and 25g versions, all of these cylinders are suitable for use with the Elcometer 110.


Elcometer 110 Pneumatic Adhesion Tester with new accessory for use with gas canisters.

The part number for the Elcometer 110 accessory is T11019558. The cylinders can be ordered directly from www.genuineinnovations.com.

Electroless nickel plating

Electroless nickel plating is, as the name suggests, carried out without the use of electricity. The substrate is immersed in a nickel solution and adheres to the substrate by chemical reduction.

This method of nickel plating has been proved to have better corrosion resistance than electrolytic nickel plating and is ideal for coating irregularly shaped and awkward objects because of it's ability to coat uniformly.

When coating aluminium, the deposited thickness depends on the time the substrate is immersed and the quality of the chemical solution. To control the quality process, the thickness must be checked. This can be carried out using the Elcometer 456N and the following technique:

The calibration is set to a thickly plated sample with a known deposit to this thickness. An unplated piece is used to set the Base to 1.0 microns. A plastic calibration foil of approximately 120 microns is then measured and a Scale Factor calculated. This new calibration can be "locked in" to the Elcometer 456.

Once this procedure has been completed, readings can be taken during the plating process as it proceeds by lifting the items, making a quick measurement and immersing them back into the solution before the surface passivates and stops accepting more plating.

This means the operator can be sure the items are in the solutions only for as long as is necessary to achieve the correct deposit thickness.

In this instance the Elcometer 456N is being used in an unconventional way because it is measuring a conductive layer on a non-ferrous substrate but it works very well and is used extensively in industries including petroleum, medical, dental, oil, gas, aerospace and automotive fields.

Making bridges better

Bridges are subject to enormous stresses, especially from heavy loads and changes in climate throughout the year. This all takes it toll on these concrete structures and if ignored, their failure can be catastrophic.

If left unchecked, concrete can delaminate or crumble, allowing the metal supporting structures to rust and the bridge to loose its strength. Proactive measures need to be taken, especially with pre-stressed bridges to alleviate any problems earlier rather than later.

Example of concrete delaminating and tendons corroding

Bridges over or near the sea, or in countries using salt on the roads for de-icing, are particularly vulnerable. The salts are absorbed by the concrete and increase the risk of corrosion to the steel supports. Using such as the Elcometer 134 test kit for chlorides enables assessment of salt present and can help build a profile and help estimate when corrosion of the internal steel will become serious.

The condition of the concrete itself must also be tested. A favoured method is using concrete test hammers such as the Elcometer 181 Mechanical Test Hammer. The test hammer strikes the surface of the concrete with a fixed and constant impact energy and produces a reading relative to the hardness of the concrete. By comparing readings along the entire bridge, it is possible to log where the weaker points in the structure are, allowing them to be closely monitored for future maintenance visits or to be recommended for immediate repair.

When coatings and membranes on bridges fail, this leads to premature corrosion. Ensuring the adhesion of both new coatings and repairs is a must.

Adhesion of a coating or bond strength of structural repairs to concrete is affected by climatic conditions, quality of coating and the original surface profile. If the temperature is too low or too high, unsatisfactory curing can occur. It is also useful to monitor the relative humidity and dewpoint temperatures, which can be done with a single unit – the Elcometer 319 Dewmeter. When the surface is within 3°C / 5°F of the dewpoint temperature, moisture will begin condensing on the surface, often resulting in poor adhesion and then delamination of a coating.

Using an Elcometer 106 Adhesion Gauge can test the adhesion and bond strength of coatings and repairs to the concrete. A test dolly (preferably of 50mm diameter) is glued to the surface or applied to the wet material. Once cured, the Elcometer 106 is simply positioned over the dolly and a load is applied. As the handle is rotated, the force applied increases and the scale on the side of the gauge indicates what it is. Usually, the concrete substrate breaks, unless the bond between that and the coating is a weak one.

Engineers use Elcometer gauges extensively in bridge surveys and maintenance. They find them portable and robust, giving confidence in their findings.

contributions, comments or questions?
e-mail us: editor@elcometer.com

Working towards WEEE & RoHS compliance for 2006

The European WEEE Directive is concerned with waste electrical and electronic equipment, while the RoHS Directive stands for “the restriction of the use of certain hazardous substances in electrical and electronic equipment”.

From 1st July 2006, the European RoHS Directive will ban sales into the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.

The People’s Republic of China, with 55% of all their exports to Europe being machinery or electronics will be greatly impacted by the new European Directives, so any small changes to the standards or regulations have a massive impact on their manufacturers.

To improve matters, the Chinese government has introduced it’s own “WEEE and RoHS” regulations to increase product quality. This in turn will have an effect on goods imported to China.

Within their regulations, the definition of “producer” includes those who produce, sell or import any EE products. Importers of EE goods into China have to comply with the legislation in exactly the same way as Chinese producers.

The table below shows a comparison between the China RoHS catalogue and the EU RoHS.

China “RoHS”	**Comparison with EU “RoHS”**
Electronic radar products	Some of these might be considered LSIT or part of an aircraft and so are out of scope of RoHS and WEEE
Electronic communication products	Similar to part of EU Category 3
Broadcast and television products	Similar to part of EU Category 4
Computer products	Similar to part of EU Category 3
Household electronic products	Similar to parts of EU Categories 1,2,3,4 and possibly 6 and 7
Electronic measurement and instrument products	Similar to EU Category 9 – currently outside the scope of RoHS
Electronic products for special use and application products	These potentially include anything
Electronic component products	The EU RoHS does not apply to components or materials except in that they must be compliant if the products in which they are in are compliant
Electronic material products and all their parts etc	Again a large and undefined scope.

These regulations are still not completely defined as China’s WEEE & RoHS has not gone through the long discussion and permission period which has happened in Europe, so it is expected that more detailed rules and guidance will be developed in due course and before the July 2006 deadline.

Elcometer are currently working towards meeting both the EU and China directives and achieving compliance by the end of March 2006, in ample time before the July 2006 deadline.

Colour measurement – part 2

In the last edition, we wrote about the need to measure colour. Now we look at the instruments to do this.

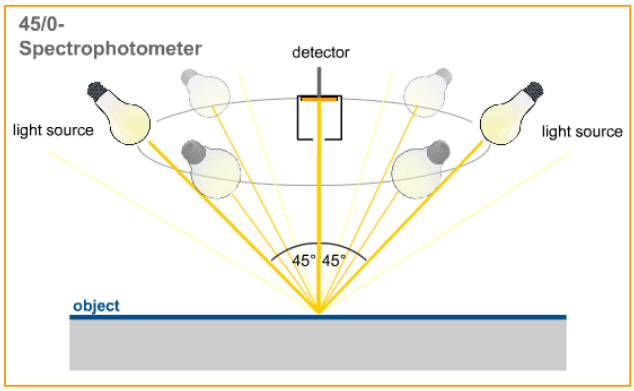
THE SIMPLEST

A coloured card, such as one from the RAL series (Elcometer 6012), may be a useful as a starting point or a rough guide for discussion but not for long. It will eventually fade and its surface will wear. The eyes of the observer may change too: colour blindness affects every twelfth man and every 200th woman. For stable measurements and an unambiguous standard that will remain, it is better to use a colour meter.

SPECTROPHOTOMETER

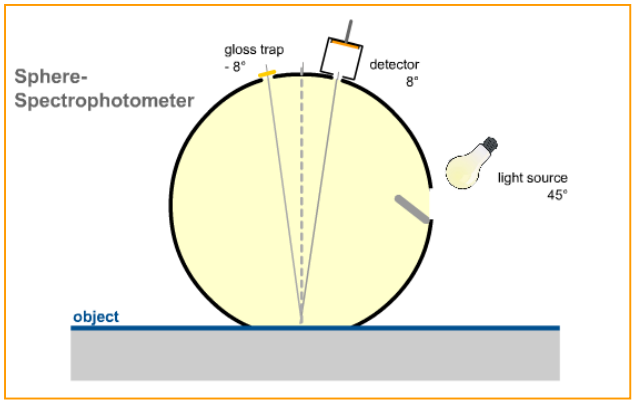
This is an instrument that measures the light reflected by a surface and measures its colour repeatably for a long time. There are three configurations to choose from.

To measure smooth, uniformly coloured surfaces, the 45-degree optical system is adequate. A circle of light shines down on the sample and the reflection from the middle is collected, filtered and analysed. For this system, the sample must not have a metallic substrate and the gloss level should not be very high.

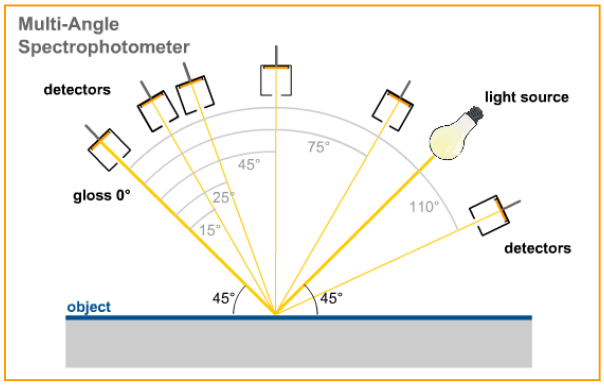


This is the Elcometer 6060. It is a portable unit that can be used for printing, wood stains and plastics. Such an instrument is a good choice for a low budget.

To measure textiles, cosmetics and paint as well as all smooth surfaces, a sphere system - the portable Elcometer 6075 and the larger Elcometer 6065 - is better because it integrates the light from the sample. The reflection due to gloss can be included (SPIN) or excluded (SPEX) and it can even measure powders and liquids if suitable fixtures are used.



Metallic substrates can affect the reading of a coating especially if it is not opaque, as light reflected from the substrate adds to that from the surface. To measure such samples, for example paint on steel car bodies, a multi-angle unit is used (Elcometer 6070). Many metallic and pearlescent finishes have a different colour when viewed at different directions so measuring at 5 different angles provides a profile of the reflection that can be compared to later.



SOFTWARE

Spectrophotometers can store readings and make comparisons with standards. But if that standard is in another country, its numerical value must be input. A PC with software or a live link via the Internet will simplify and control this process. This is one reason for X-riteColor® Master QA I and II software (Elcometer 6090). It will even analyse trends.

If prediction of recipes of pigments and colours is wanted, one of the two versions of X-riteColor® Master Formulation should be used (Elcometer 6090).

The readings from the multi-angle spectrophotometer are stored and analysed by QA-Metallic software, which is included with the Elcometer 6070.

CHOICES

Before investing in colour measuring equipment, it is necessary to consider certain factors. The type of material to be measured will dictate if a sphere system is used or not. More features mean more cost so buy only what is appropriate for the job. If reports or historical data is required, then software will be necessary. Most importantly, decide this early on.

Next issue…

The choice of spectrophotometer depends on the samples to be tested. In the next issue, we will consider some real applications.

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